

# Space Science Applications of Frequency Standards and Metrology

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An overview of space science applications of frequency standards and metrology is presented. Emphasis is given to planetary missions with constellations of spacecraft coherently tracking each other with electromagnetic beams for performing their scientific experiments. Although it is in principle possible to cancel the frequency fluctuations of the standards from the Doppler measurements by applying Time-Delay Interferometry [1], we show that the effectiveness of this technique will greatly rely on having on board state-of-the-art frequency references.

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<sup>1</sup> M. Tinto & S.V. Dhurandhar, "Time-Delay Interferometry", Living Reviews in Relativity, 8, no 4 (2005).